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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY, DIVISION OF MYCOLOGY AND DISEASE SURVEY
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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

IN THIS ISSUE

Roderick Sprague sends a list of parasitic fungi occurring on grasses in Klickitat County, Washington, page 228.

Indications are that wheat leaf rust will be severe in Kansas this year, according to C. O. Johnston, page 240.

M. W. Felton sends a summary of leaf rust development in Nebraska, page 241.

O. C. Boyd reports that the spring dwarf disease of strawberries has been decreasing in prevalence in the Cape Cod area of Massachusetts, page 241.

Brief notes, page 242, includes reports by M. C. Richards of New Hampshire and E. A. Walker of Maryland on potato virus diseases in New Hampshire last year, tobacco seedbed diseases in Maryland this spring, apple scab in Maryland, and apple scab and other diseases favored by wet weather in New Hampshire.

Announcement of a new handbook of virus diseases of stone fruits, page 244.

AN ANNOTATED LIST OF THE PARASITIC FUNGI ON CEREALS AND OTHER GRASSES IN KLICKITAT COUNTY, WASHINGTON 1/

Roderick Sprague 2/

Klickitat County, Washington, extends as an elongated trapezoid-shape area bordered by the Columbia River on the south, the Cascade range on the west, Yakima County on the north, and arid Benton County on the east. The average annual precipitation of Klickitat County ranges from about 40 inches in the rugged pine-covered western edge to less than 10 inches in the bunch grass area of the eastern half. Except for a narrow strip of upper Sonoran Zone devoted variously to fruit, forage, and garden crops along the floor of the Columbia River gorge, most of the region is a rugged to rolling foothills plateau devoted to lumbering (western portion), cereals (central portion of Agropyron-Festuca sod grasses), and grazing (eastern and general). There is a fertile, dairy area centering at Troutlake in a valley at the base of Mt. Adams. At White Salmon the fruit district extends up beyond the floor of the gorge into the adjacent hills.

The Klickitat country has long been of interest to botanists, particularly taxonomists and plant ecologists, on account of the studies of the pioneer plant taxonomist W. N. Suksdorf (2). Piper (3) discussed the area in his flora, pointing out that many of the plants that occur along the warm, north side of the Columbia Gorge (southern slope) are hundreds of miles north of their next most northernly point of occurrence.

The present study is based on random collections made at irregular intervals mostly along the Evergreen Highway from Bingen to Goldendale or in the vicinity of High Prairie, Washington, where cereal disease investigations were in progress from 1929 to 1940. The numbers (e.g., 8079) refer to the herbarium numbers of the Mycological Herbarium at Oregon State College. A number of the specimens are represented in the Mycological Collections of the Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C., and in the Collections of the Department of Plant Pathology, Washington State College, Pullman, Washington. The collections, unless appended by the collector's name (e.g., Suksdorf 532), were made by the writer.

This list gives 28 genera of fungi, including at least 73 recognized species and varieties, and a total of 191 host-pathogen combinations. The total number of collections cited is 327, found on about 53 gramineous hosts.

1/ Cooperative investigations between the Divisions of Cereal Crops and Diseases and Forage Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, and the Washington Agricultural Experiment Station.

2/ Pathologist, Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture.

SCHIZOMYCETES

EUBACTERIALES

BACTERIUM CORONAFACIENS Elliott var. ATROPURPUREUM Reddy & Godkins (CHOCOLATE SPOT)

This organism is less common on the warmer, drier Klickitat County side of the Columbia Gorge than on the opposite shaded bank in Oregon.

On Bromus carinatus Hook. & Arn. Seen at Bingen. (No specimen collected.)

B. tectorum L., Bingen, 8088.

PHYCOMYCETES

PHYCOMYCETE on Poa pratensis L., 5 miles east of Bingen, 457. A primitive unilocular body or cluster of large cells imbedded in a leaf spot. No one has been able to identify this even to an order as yet. It may be near the Chytridiales. This or a group of similar fungi are common on grasses in Oregon during the humid winter months.

ASCOMYCETES

ERYSIPHALES

ERYSIPHE GRAMINIS DC. (POWDERY MILDEW).

Except in early season powdery mildew is not common in Klickitat County. It is most destructive on some of the native bluegrasses (Poa spp.) growing in the shade of rocks along the Columbia Gorge. It was prevalent on Elymus condensatus Presl in the Goldendale Valley following the moist rains of June 1937.

On Agropyron spicatum (Pursh) Scribn. & Smith, 4 miles east of Lyle, 8063; near Wishram, 172.

Bromus carinatus Hook. & Arn., Underwood, 10867; 4 miles east of Lyle, 8085.

B. rigidus Roth., Bingen to Lyle, 8101.

B. tectorum L., Lyle to Bingen, 8102.

Elymus condensatus Presl, Goldendale Valley to Lyle 8328, 8392.

E. glaucus Buckl., west of Wishram, 209.

Festuca idahoensis Elmer, near Lyle, 8117.

Hordeum vulgare L., observed on High Prairie in 1934 (no specimen).

Koeleria cristata (L.) Pers., Maryhill Grade (no specimen).

Poa canbyi (Scribn.) Piper, High Prairie, 8116.

P. pratensis L., Lyle to Bingen, 8072; Maryhill grade, 208.

P. scabrella (Thurb.) Benth., 6 miles west of Lyle, 8123.

P. secunda Presl, High Prairie, 8113, 8146; east of Bingen, 8080; Maryhill Grade, 8087, 8075; 5 miles west of Maryhill, 8069; 2 miles northeast of Lyle, 260; near Lyle, 500.

P. vaseyochlca Scribn., 4 miles west of Lyle, 499, 501, 8079, 8251; across the river from Mosier, Oregon, 574 A.
Polypogon monspeliensis (L.) Desf., Maryhill and vicinity, 8128, 8138, 8139, 223.
Triticum aestivum L., Lyle; seen in 1933, 1934, 1935, 1936, 1937 on High Prairie, 8309.

SPHAERIALES

MYCOSPHAERELLA TULASNEI Jacz. (LEAF MOLD).

This and its Cladosporium stage are prevalent on the overwintering leaves of a number of grasses. In most cases the fungus is obviously a saprophyte on old dead overwintering plant tissue. In a few cases the fungus appears to be a mild parasite particularly on the perennial foliage of Idaho fescue:

On Agropyron spicatum (Presl) Scribn. & Smith, Satus Pass, 10972.
Festuca idahoensis Elmer, High Prairie, 10971; Satus Pass, 10964.
Holcus lanatus L., Bingen, 10942.
Poa compressa L., 5 miles north of Husum, 8248 (Conidial stage).
Trisetum canescens Buckl., 8 miles northeast of Lyle, 8422.
Triticum aestivum L., High Prairie, 8307.

MYCOSPHAERELLA SPP.

The following collections have not been definitely determined and may also be M. tulasnei:

On Elymus triticoides Buckl., Warick, 117.
Poa canbyi (Scribn.) Piper, Lyle, 8119.
P. secunda Presl, Maryhill, 8071.

FUNGI IMPERFECTI

SPHAEROPSIDALES

ASCOCHYTA SP.

Causes a vaguely formed leaf spot on winter barley (Hordeum vulgare L.) on High Prairie in early spring, 471, 771, 10867, 10959. The same fungus occurs on Holcus lanatus L. near Bingen, Wash., 8081, 8089. This group is being studied at present.

DARLUCA FILUM (Biv.) Cast.

A common associate and parasite on rusts in western Oregon (8) and Washington, but rare in Klickitat County, particularly east of Lyle. While inhibiting the rust it also seems to do the host plant no particular good in some instances.

On Puccinia coronata Corda on Holcus lanatus L., Bingen, 507, 8083, 8089; White Salmon, 210
P. poae-sudeticae (Westend.) Jørstad on Poa nervosa (Hook.) Vasey, Lyle, 8110.
P. poae-sudeticae (Westend.) Jørstad on Poa pratensis L., Lyle, 512; Bingen, 8072; 5 miles east of Bingen, 511.

DILOPHOSPORA ALOPECURI (Fr.) Fr.

George Fischer found abundant material of this fungus on Sitanion jubatum J. G. Smith, in the Goldendale Valley following heavy rains in June 1937, 10892; Centerville, 755; Warick, 8408; Maryhill Grade, 8413.

HENDERSONIA AGROPYRI-REPENTIS Cud. (Near H. culmicola Sacc.)

On Elymus glaucus Buckl., near Lyle, 475.

HENDERSONIA CULMICOLA Sacc.

On Poa secunda Presl, Maryhill Grade, 323.

SELENOPHOMA DONACIS (Pass.) Sprague & Johnson

On Elymus condensatus Presl, Warick, 764, 8392; High Prairie, 8380.

SELENOPHOMA DONACIS (Pass.) Sprague & Johnson var.

On Agropyron spicatum (Pursh) Scribn. & Smith, Klickitat Hills, 8426.

A. repens (L.) Beauv., 4-1/2 miles west of Bingen, 769.
Festuca idahoensis Elmer, Lyle, Wash. (Fischer)
Poa juncifolia Scribn., near Underwood, 10981.
P. secunda, Maryhill, 8087.

SEPTORIA ELYMI Ell. & Ev. (LEAF BLOTCH).

This disease is very common on Agropyron repens in certain places along the Columbia Gorge between Lyle and Bingen, and occurs on Agropyron spicatum and Elymus glaucus in central Klickitat County.

On Agropyron repens (L.) Beauv., near Bingen.

A. spicatum (Pursh) Scribn. and Smith, Klickitat Hills, 10925; near Wishram, Wash., 172.

Elymus glaucus Buckl., 4 miles east of Bingen, 8065; across Columbia River from Mosier, Oreg., 8066; 8132; Klickitat Gorge, 8128; Lyle, 8129; High Prairie, 176.

SEPTORIA INFUSCANS (Ell. & Ev.) Sprague[3/]

A common leaf mottle on rye grasses in the arid hills of central and eastern Klickitat County. It was very common in June 1938 and again in June 1939.

On Elymus condensatus Presl, High Prairie, 8380; Warick, 8392; Centerville, 537; western Goldendale Valley, 699; near Warick, 764; Wishram, 10922.

E. triticoides Buckl., Warick, 117, 8378, 8423; near Centerville, 577.

E. glaucus Buckl., Klickitat Gorge, 8420.

SEPTORIA JACUCELLA Sprague[4/]

On Bromus rigidus Roth, 4 miles west of Lyle, 8070.

B. tectorum L., near Lyle, 8082, 8133.

3/ In Cooke, W. B., Mycobiota No. 113, 1940.
4/ In Cooke, W. B., Mycobiota No. 114, 1940.

SEPTORIA KOELERIAE Cocc. & Mor.

This is not uncommon and in very early spring is sometimes locally abundant.

On Koeleria cristata (L.) Pers. in the Klickitat Hills, 8145; High Prairie, 429; 659.

SEPTORIA MACROPODA Pass. var.

This is a very common leaf blotch on leaves in the early spring. This large spored variety of S. macropoda is apparently indigenous to the interior of western America. The collections on Poa ampla approach S. tritici in size.

On Poa ampla Merr., Klickitat Canyon, 8077, 399, 8144, 8165.

P. nervosa (Hook.) Vasey, Lyle, 8143. This collection belongs near S. macropoda var. septulata (Gz. Fr.) Sprague, which is common on P. pratensis in western Washington.

P. scabrella (Thurb.) Benth., Klickitat Canyon, 144, 10999; Satus Pass, 3178.

P. secunda Presl, general on the prairies, 8087; 8140; 8142; 8146; 8156; 8166; 400; 402; 403; 1; 2; 4; 100; 103; 169; 170; 177.

P. vaseyochloa Scribn., upper Klickitat Creek, 8114; High Prairie, 400, 401.

SEPTORIA OUDEMANSII Sacc. (TAN LEAF SPOT).

On Poa pratensis L., near White Salmon, 10968; 15 miles west of Maryhill, 8074.

Poa secunda Presl, Maryhill, 8087.

SEPTORIA POLIOMELA Sydow. (BUFF LEAF SPOT).

On Deschampsia danthonioides (Trin.) Munro, near High Prairie in the Klickitat Hills, 8130.

SEPTORIA TRITICI Rob. (LEAF SPOT AND BLOTCH).

The rosettes of winter wheat are often 100% infected with S. tritici after the snows leave the prairies in March.

On Triticum aestivum L., Goldendale Valley, 134; 138; 438; 8028; High Prairie, 8027; 8029; 97; 111; 46; 443; 444; 437.

SEPTORIA TRITICI Rob.

Isolated from Avena sativa L. on High Prairie in 1934 but apparently no specimen was retained in the herbarium by the writer.

WOJNOWICIA GRAMINIS (McAlp.) Sacc. & D. Sacc. (SECONDARY ROOT ROT).

A majority of the citations to this fungus are based on determinations from pure culture isolations (5), (9).

On Agropyron cristatum (L.) Gaertn. High Prairie. From isolation.

Avena sativa L. High Prairie, 8037.

Hordeum vulgare L. Centerville, High Prairie. From isolations.

Secale cereale L. High Prairie. From isolations.

Triticum aestivum L. High Prairie, Centerville, 7023. From isolations.

T. dicoccum Schrank, High Prairie. From isolations.
T. durum Desf., High Prairie. From isolations.
T. monococcum L., High Prairie. From isolations.
T. spelta L., High Prairie. From isolations.

UNDETERMINED BLACK SPOT.

In early season, Agropyron spicatum (Pursh) Scribn. & Smith is sometimes affected with a leaf spot developing first as small circular brown lesions, later elongating and turning black. The black color is due to stromatic tissue, black at the surface but hyaline beneath. It is more or less interrupted and grouped into pycnidial-like units. The fungus has some resemblance to Septogloeum oxysporum Sacc., Bomm. & Rouss., or it might be the pycnidial stage of a species of Phyllachora, but no spores have been seen. It has been found a number of times in late February and early March in shaded areas on the hills above Wishram, but only one collection is filed, 10926, collected February 27 near Wishram during the unseasonably early spring of 1935. It is often widespread but seldom serious, as usually only a few spots occur on a plant.

MELANCONIALES

PSEUDODISCOSIA AVENAE Sprague & Johnson. (RED LEATHER LEAF).
On Avena sativa L., High Prairie (Type locality) (4) (10). 8036.

MONILIALES

CERCOSPORELLA HERPOTRICHOIDES Fron. (CERCOSPORELLA FOOT ROT).

This is the most important parasite on Gramineae in the county. It does extensive damage to cereals on High Prairie and adjacent parts and occurs in the Goldendale Valley near Centerville. It has been fully discussed elsewhere (6) (9) and has been reported on the following hosts from the region: Agropyron cristatum (L.) Gaertn., Avena sativa L., Hordeum vulgare L., Secale cereale L., Triticum aestivum L., T. dicoccum Schrank, T. durum Desf., T. monococcum L. and T. spelta L.

CERCOSPORELLA HOLCI Sprague (7) (LEAF SCORCH).
On Holcus lanatus L., Bingen, 8089, 8135; 2 miles west of Lyle, 131.

EPICOCCUM PURPURASCENS Ehrbg. (LEAF MOLD).

The pathogenicity of this organism is questionable, but it may have some deleterious effect upon the seeds.
On Holcus lanatus L., Bingen, 8081, 8089.

FUSARIUM CULMORUM (W. G. Sm.) Sacc. (ROOT ROT).

This fungus has been isolated from the roots of various cereals (9) and grasses. It is particularly destructive on spring oats on the prairies and is a secondary rot on Cercosporella-infected plants. On the grasses it appears to be aggressive on Bromus tectorum L. and Hordeum jubatum L. Associated with it are F. equiseti (Cda.) Sacc., F. scirpi Lamb. & Fautr. var. acuminatum (Ell. & Ev.) Wr. and F. oxysporum Schlecht.

On Agropyron cristatum (L.) Gaertn., pure culture isolations (6).
Avena sativa L., High Prairie, 8170 (det. by Miss Helen Johann).
Bromus tectorum L., High Prairie, pure culture isolations.
Hordeum jubatum L., High Prairie, pure culture isolations.
H. murinum L., High Prairie, 8157.
H. vulgare L., High Prairie, Centerville, pure culture isolations.
Secale cereale L., High Prairie, pure culture isolations.
Triticum aestivum L., High Prairie, Centerville, pure culture isolations.
T. dicoccum Schrank, High Prairie, pure culture isolations.
T. durum Desf., High Prairie, pure culture isolations.
T. monococcum L., High Prairie, pure culture isolations.
T. spelta L., High Prairie, pure culture isolations.

FUSARIUM SPP. (LEAF SPOTS AND ROOT ROTS).

Most but not all of this miscellaneous group have been found on definite gray or sordid spots on the leaves of grasses in late "open winters" or in early spring. The spores of these collections are mostly 1-septate, relatively small, scarcely heeled and may be close to F. nivale (Fr.) Ces.

On Bromus carinatus Hook. and Arn., Lyle, 8097.
B. mollis L., a red leaf mold in early spring, High Prairie, 472.
B. tectorum L., Lyle to Bingen, 136, 8096; Maryhill, 10851, 8137; Warick, 93, 124.
B. rigidus Roth, 4-1/2 miles east of Bingen, 109.
Elymus glaucus Buckl., near Lyle, 10927.
Hordeum murinum L., Maryhill Grade, 8136, 8157.
H. nodosum L., 2 miles east of Lyle, 8134.

HELMINTHOSPORIUM BROMI Died.

This fungus was prevalent on seedlings in March 1937.
On Bromus tectorum L., near Underwood, 10963.

HELMINTHOSPORIUM DICTYOIDES Drechsl.

On Festuca occidentalis Hook., near Bingen, 473.

HELMINTHOSPORIUM SATIVUM P. K. & B. (LEAF SPOT, ROOT ROT and CROWN ROT).

On Bromus carinatus Hook. & Arn., opposite Celilo Falls, 8063.
Hordeum murinum L., High Prairie, 8157.
H. vulgare L., Centerville, 8034.
Phleum pratense L., Bingen, 8099.
Triticum aestivum L., Goldendale Valley, pure culture isolations.

HELMINTHOSPORIUM TRITICI-REPENTIS Died.

On Elymus glaucus Buckl., 8 miles northeast of Lyle on old road to Goldendale, 8435.

HELMINTHOSPORIUM VAGANS Drechsl. (LEAF ROT and PURPLE SPOT).
On Poa compressa L., 5 miles north of Husum, 8248.
Poa pratensis L., Lyle to Bingen, 8072; near Underwood, 10969; White Salmon, 10967.

HELMINTHOSPORIUM POAE Baudys
On Poa secunda Presl, High Prairie (4).

HETEROSPORIUM AVENAE Oud. (LEAF MOLD).
The large-spored Heterosporium that occurs on necrotic leaves of overwintered wheat (Triticum aestivum L.) in the Goldendale Valley is referable to H. avenae Oud., 8002.

HETEROSPORIUM PHLEI Grev. (MAROON RING SPOT)
On Phleum pratense L., Bingen, 8095; High Prairie, 8195.

CVULARIA PULCHELLA (Ces.) Sacc. (GRAY LEAF SPOT).
On Bromus carinatus Hook. & Arn., near Celilo Falls, 8062.

RHYNCHOSPORIUM SECALIS (Oud.) J. J. Davis (LEAF SCORCH).
On Agropyron repens (L.) Beauv., 5 miles east of Bingen, 491.
Elymus condensatus Presl, near Celilo Falls, 8060.
E. glaucus Buckl., general in the Columbia Gorge, 8061, 8066.
Hordeum vulgare L., High Prairie, 8191, 8252.

SCOLECOTRICHUM GRAMINIS Fckl. (STREAK DISEASE).
On Agropyron repens (L.) Beauv., 4-1/2 miles east of Bingen, 769.
Arrenatherum elatius (L.) Mert. & Koch., White Salmon, 10970; 4 miles south of Guler, 8452; Guler, 8482.
Bromus carinatus Hook. & Arn., Goldendale Valley, 8314; Warick, 8190; Klickitat Canyon, 8122; Lyle 140; Bingen, 536; near Goldendale, 537.
Elymus condensatus Presl, 2 miles west of Centerville, 761.
Elymus glaucus Buckl., Maryhill, 8078; Klickitat Canyon, 8188.
Hordeum nodosum L., west of Lyle, 739.
Phleum pratense L., Trout Lake, 10973.
Poa ampla Merr., Klickitat Hills, 8164 (contains multiseptate spores).
Poa compressa L., Lyle, 8076; Wishram, 8106; Bingen, 8098; near Husum, 8248; High Prairie, 212; White Salmon, 224.
Sitanion jubatum J. G. Smith, general in eastern half of County, 8064; 10304; 8073; 8194; 8193; 10829; 531; 10975.
Stipa occidentalis Thurb., Satus Pass, 8375.
S. columbiana var. nelsonii (Scribn.) Hitch., between Lyle and Bingen.

BASIDIOMYCETES

USTILAGINALES

Suksdorf and later Zundel collected a number of smuts from Klickitat County which have been listed by Zundel in his report (11). The writer and, recently, Fischer have added several others.

ENTYLOMA IRREGULARE Johan.

While very common and sometimes destructive on Poa pratensis L. in Oregon this leaf smut is relatively rare in Klickitat County. Found once at water trough between Lyle and Bingen, 8072. Det. by Zundel.

Entyloma sp. very prevalent in one location along shore of Columbia River west of Bingen in earliest spring on Poa vaseyochloa Scribn., 8079. Sent to Zundel.

TILLETIA GUYOTIANA Har. (BROME COVERED SMUT).

On Bromus mollis L., High Prairie, 8171, 8310, 8311; Warick. (Fischer's Collections)

B. racemosus L., Goldendale, (Zundel and Cooney); near Goldendale, (Zundel); White Salmon, (Zundel); Stakers Canyon, (Zundel).

TILLETIA FOETIDA (Wal.) Liro (Tilletia levis Kühn) (SMOOTH-SPORED STINKING SMUT).

Reported.

TILLETIA CARIES (DC.) Tul. (Tilletia tritici (Bjerk.) Wint.) (ROUGH SPORED STINKING SMUT).

On Triticum aestivum L., general, 702, 8184, 8186, 8192.

T. dicoccum Schrank, High Prairie (Specimen sent to Pullman, Wash.).

UROCYSTIS AGROPYRI (Preuss.) Schroet. (LEAF SMUT).

On unknown grass, Bingen, Suksdorf, 464.

UROCYSTIS TRITICI Körn. (FLAG SMUT).

On Triticum aestivum L., Heald, Holton and Ternahan collected material of this in fields near Goldendale and 5 miles east of there in August 1940, and it was again found in 1941.

USTILAGO AVENAE (Corda) Jens.

On Arrhenatherum elatius (L.) Mert. & Koch, Troutlake, (Zundel); High Prairie, 10088.

USTILAGO CRUS-GALLI Tr. and Earle (SMUT).

On Echinochloa crusgalli (L.) Beauv., Bingen, Suksdorf 404, 3677.

USTILAGO PULLATA Berk. (LOOSE BROME SMUT)
On Bromus carinatus Hook. and Arn., "Columbia River", Suksdorf 66; Bingen, 232.
B. mollis L., High Prairie, 8187.
B. racemosus L., White Salmon, (Zundel).
B. tectorum L., general, 8163, 8172.

USTILAGO ECHINATA Schroet. (SMUT).
On Phalaris arundinacea L., Bingen, Suksdorf 413.

USTILAGO HYPODYTES (Schl.) Fr.
On Stipa sp., Falcon Valley, Suksdorf 606 a.

USTILAGO JENSENII Rostr. (U. hordei (Pers.) K. & S.) (COVERED BARLEY SMUT).
On Hordeum vulgare L., common on High Prairie, 8165.
H. distichon L., common in one field in 1929 on High Prairie.

USTILAGO KOLLERI Wille (Ustilago levis (Kell. & Sw.) Magn.) (COVERED (OAT SMUT).
On Avena sativa L., High Prairie, 8183.

USTILAGO MULFORDIANA Ell. & Ev. (FESCUE SMUT).
On Festuca octoflora Walt., Bingen, Suksdorf 555.
F. reflexa Buckl., Bingen, Suksdorf 804.

USTILAGO SITANII Fisher (LOOSE SMUT).
On Elymus glaucus Buckl., (Fischer's collections) 10832.
Sitanion hanseni (Scribn.) J. G. Smith, without locality, Fischer June 15, 1937.
S. jubatum J. G. Smith, Warick, 10921; 757; 8383.

USTILAGO STRIAEFORMIS (West.) Niessl
On Phleum pratense L., Bingen, Suksdorf 532; High Prairie, 233.

USTILAGO TRITICI (Pers.) Rostr. (LOOSE SMUT).
On Triticum aestivum L. Seen in plots on High Prairie in 1932 from seed grown in the eastern United States.

UREDINALES

Suksdorf also collected a number of grass rusts which are listed in Hotson's paper (1). Further collection will no doubt add a large number to this list. During the years 1929 to 1940 rusts were not particularly abundant in Klickitat County.

PUCCINIA CORONATA Cda. (CROWN RUST).
On Holcus lanatus L., Bingen, 8089, 8153, 507, 8083, 8084; White Salmon, 210, 508.

PUCCINIA GLUMARUM (Schmidt) Erikss. & Henn. (STRIPE RUST).
On Bromus mollis L., High Prairie, 7527.
Elymus glaucus Buckl., Bingen, 8100.
Hordeum jubatum L., High Prairie, 7526.
Triticum aestivum L., High Prairie, 8307.

PUCCINIA GRAMINIS Pers. (STEM RUST).
On Triticum aestivum L., Falcon Valley, Suksdorf, 399.

PUCCINIA GRAMINIS PHLEI-PRATENSIS(Erikss. & Henn.) Stak. & Piem.
On Phleum pratense L., near Wishram, 8104; Bingen, 8099.

PUCCINIA PATTERSONIANA Arth.
The aecial stage of this rust usually is common on Brodiaea douglasii Wats. growing in oak thickets in the Klickitat Hills. On account of the early, dry summers, the uredia and telia on Agropyron spp. and other grasses are relatively rare. In fact, the first known collection of this rust on Agropyron spicatum (Pursh.) Scribn. & Smith for the State of Washington was made in 1936. The precipitation during June was heavy and favorable for rust development and P. pattersoniana was common on A. spicatum (bluebunch wheat grass) in the Klickitat Hills between Lyle and Goldendale, 8174, 8175.

PUCCINIA PHRAGMITIS (Schum.) Körn.
On Phragmites communis Trin., one mile west of summit of Lyle Hill, Evergreen Highway, 8090 (with W. T. Lund).

PUCCINIA POAE-SUDETICAE (Westend.) Jørstad (BLUE GRASS RUST).
On Poa ampla Merr., old road to Goldendale, Klickitat Canyon, 8077.
P. compressa L., Wishram, 8103.
P. nervosa (Hook.) Vasey, Lyle, 8110, 8143.
P. pratensis L., Maryhill, 8152, 8067; Wishram, 8105, 8188; 5 miles north of Goldendale, 8124; near High Prairie, 8115; near Lyle, 8072; between Bingen and Lyle, 511; Bingen, 512.
P. vaseyochloa Scribn., upper Klickitat Creek, 8114.

PUCCINIA RUBIGO-VERA (DC.) Wint. (LEAF RUST).
In the experimental plots on High Prairie, traces of leaf rust have been seen on emmer and spelt but apparently no collections were made on these hosts. Leaf rust also occurs in moderate amounts on certain grasses and on wheat. Leaf rust sometimes occurs on winter wheat in the fall soon after emergence.
On Agropyron dasystachyum (Hook.) Scribn., Wishram, 266.
Agropyron spicatum (Pursh) Scribn. & Smith, Bingen, Suksdorf, 60; near Wishram, 172.
Agropyron sp., Bingen, Suksdorf, 531.
Bromus carinatus Hook. & Arn., Lyle to Bingen, 8120, 8151, Suksdorf, 537.
B. rigidus Roth, Lyle, 8121.

Bromus sp., Falcon Valley, Suksdorf, 33; Bingen, Suksdorf, 794.
Elymus glaucus Buckl., Lyle; Troutlake, Suksdorf, 792; Falcon Valley, Suksdorf, 994; Bingen, 8086, 8100; Suksdorf, 602; Wishram, 209; 8 miles northeast of Lyle, 8435.
Poa scabrella (Thurb.) Benth., Klickitat Canyon, 8112.
Secale cereale L., Bingen, Suksdorf, 553.
Triticum aestivum L., High Prairie, 8169, 8307, 8309.

PUCCINIA SCABER (Ell. & Ev.) Barth.
On Oryzopis hymenoides (Roem. & Schult.) Ricker, Wishram, 207.

UROMYCES MYSTICUS Arth.
On Hordeum nodosum L., Bingen, 8111.

HYMENIALES

RHIZOCTONIA SOLANI Kühn
On Poa pratensis L., Troutlake, 10965.
Triticum aestivum L., sometimes isolated from the roots; High Prairie.

MYCELIA STERILIA

SCLEROTIUM sp.
Small sclerotia, about the size and color of radish seeds, occurred on the bleached leaves of fall annual brome grasses (Bromus mollis L. and B. tectorum L.) on High Prairie in early spring 1936, 8158. They failed to germinate on potato dextrose agar.

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THE CEREAL DISEASE SITUATION IN KANSAS

C. O. Johnston

The early spring of 1942 has been marked by rather low temperatures and abundant rains, especially in the western half of the State. As late as the middle of May light frosts occurred in northwestern counties. Severe floods occurred in the Arkansas River valley and water was high in all western Kansas streams. In general this can be called a cool, wet spring favoring the development of such diseases as leaf rust and mildew but being unfavorable for stem rust.

There is every indication that another severe epiphytotic of leaf rust of wheat (Puccinia rubigo-vera tritici) is rapidly developing in the southern and central plains area. In Kansas heavy infection already has developed as far north as Manhattan along the eastern edge of the area of large wheat acreages, which extends approximately from Manhattan straight south to the Oklahoma line. East of that area leaf rust infection also is heavy but the acreage of wheat is unusually small owing to heavy rains at seeding time last fall. Leaf rust infection was heavy in south central Kansas before May 15 but has appeared in abundance in northern counties since that date. One alarming feature of the situation is the fact that uredial development already has reached the flag leaves although much of the wheat is just beginning to head. Heavy rust infection on upper leaves before flowering nearly always results in considerable reduction in yield. Considerable apprehension is felt for the large acreage of late wheat in the western half of the State where about 65% of the 1942 Kansas wheat crop is located. Abundant rains have resulted in unusually heavy top-growth in that area.

Besides leaf rust there is considerable mildew (Erysiphe graminis tritici) on wheat in some localities but not so much as in 1941. Speckled leaf blotch (Septoria tritici) is abundant in the central part of the State and is severe in southeastern counties. A black leaf spotting, apparently caused by a species of Helminthosporium, also is abundant in some fields in central Kansas.

Leaf rust of rye (Puccinia rubigo-vera secalis)is the heaviest the writer ever has observed. There is a considerable acreage of rye in the eastern half of the State and practically all fields were heavily infected by May 1. This rust overwintered in abundance.

Leaf rust of barley has been observed on winter barley at Manhattan but so far no infection has been seen on spring-seeded barley. Mildew (Erysiphe graminis hordei) is very heavy on susceptible varieties of barley.

To this diate no natural infections of stem rust on any cereal crop and no crown rust of oats has been seen by the writer or reported from any

location in Kansas. Night temperatures in particular and average temperatures in general have been much too low for the development of those rusts. (DIVISION OF CEREAL CROPS AND DISEASES, U. S. BUREAU OF PLANT INDUSTRY. May 22).

EARLY LEAF RUST DEVELOPMENT IN EASTERN NEBRASKA IN 1942

M. W. Belton

New leaf rust pustules on winter wheat were found near Lincoln on March 22 of this year. This is the earliest date reported for leaf rust infection on winter wheat at this station. The condition of these new infections indicated that some lesions had been mature some 10 days to 2 weeks earlier. Old uredinia in various degrees of preservation could be found where rank growth or clustered plants had protected lower leaves. New infection was limited to such places. At this time rust was readily found only in early planted fields where growth had been heavy the previous fall. It could rarely be found where the sparse development of late plantings had provided little protection. A heavy covering of snow during the periods of sub-zero temperatures permitted winter cereals at Lincoln to overwinter with an unusual amount of uninjured foliage. Conditions seemed favorable for an early leaf-rust epiphytotic.

However, cool, dry weather prevailing during the last week of March and the first 3 weeks of April discouraged new infection while wheat developed rapidly. The vigorous, heavy new growth soon smothered the lower leaves which bore the early infections. By mid-April leaf rust became difficult to find but occasional pustules still persisted.

More favorable conditions have existed during the last week of April and the first 3 weeks of May. Extended periods of cloudy weather with heavy rains and frequent showers have permitted a steady increase of leaf rust, although unusually low temperatures have prevented optimum development. Infection at present (May 23) is limited to lower leaves and is quite variable within fields. In general, however, the inoculum is adequate and the weather of the next few weeks will determine the severity of infection.

Meanwhile, early varieties were heading by May 15, and May 31 will see practically all fields of winter wheat headed out in southeastern Nebraska.
(UNIVERSITY OF NEBRASKA, COLLEGE OF AGRICULTURE. May 27).

STRAWBERRY SPRING DWARF SITUATION ON CAPE COD

O. C. Boyd

On May 12, several strawberry fields were examined in the Falmouth area of Cape Cod for appraisal of the spring dwarf [*Aphelenchoides fragariae*] situation, which was very similar to that for the corresponding season of 1941. Each year recently seems to present a decreasing number of diseased beds. Also, both last year and this spring, injury in affected

beds was somewhat less than in most previous years owing to the markedly decreasing intensity of the disease in the daughter plants away from the mother plants. In most diseased fields, only the mother plant was severely damaged, the first secondary plant less so, and the second and third daughter plants were fully or nearly normal in appearance and set of blossom buds. In both 1941 and 1942, the light damage was attributed, at least in part, to the unusually dry weather of the preceding summers when secondary plants were forming.

Indications point strongly to an easing up in the spring dwarf situation since more locally-grown and northern-grown nursery stock has replaced the customary southern stock. During the past 2 seasons, dwarf has not been observed in the bearing fields planted either directly from the local and northern nursery sources or from home-grown plants originating in such nurseries. This year, the only cases of dwarf observed were in fields planted either directly from stock grown in Maryland or from home-grown plants one year removed from Maryland plants.

Under the general supervision of County Agent Bertram Tomlinson, about 250,000 plants were grown on the Barnstable County Farm in 1940 and set out by Falmouth growers in 1941. This spring, twice that number of plants, grown on the same farm last year, were set out for the 1943 production. The growers appeared to be well pleased with the appearance of the one-year beds as well as the newly set beds planted from the county farm nursery stock.

Demonstration plantings, conducted in cooperation with Dr. J. R. Christie of the U. S. Nematology Division, and terminating in 1941 indicated that the spring dwarf nematode does not survive in the soil on Cape Cod from the end of one season to the beginning of the next, and apparently that infected plants are the only source of the disease as it occurs on the Cape.

(MASSACHUSETTS STATE COLLEGE).

BRIEF NOTES ON PLANT DISEASES

INCREASE OF POTATO VIRUS DISEASES IN NEW HAMPSHIRE LAST YEAR: The summer of 1941 was the driest on record in New Hampshire for the past 71 years; as a result, the prevalence of plant diseases was different from normal. The increase of virus diseases in potatoes was particularly noticeable. In the southern part of the State where only table stock is grown, some fields of Green Mountains showed 10 to 15% net necrosis at digging time. Tubers from these and other fields stored until March and April showed from 50 to 80% net necrosis. The spread of leaf roll was also high in the seed-growing areas in fields where the plants were late in maturing. Certified seed coming into New Hampshire this spring from neighboring States contains as much as 50% net necrosis and 10 to 15% stem-end browning. As a result of the losses from net necrosis in Green Mountains this past year, many growers will plant varieties such as Houma, Katahdin, Sebago, and Sequoia for the first time. (M. C. Richards, New Hampshire Agricultural Experiment Station).

TOBACCO SEEDBED DISEASES IN MARYLAND: Tobacco blue mold [= downy mildew, Peronospora tabacina] was first observed on May 4 this year, in lower Calvert County, and appeared generally throughout the State by May 14. It is less destructive this year than usual owing partly to the extreme drought of the past 2 months. Rains occurred on May 21-23 in the upper tobacco counties and blue mold has injured many plant beds in Prince Georges and Anne Arundel Counties.

Tobacco anthracnose (Colletotrichum sp.), reported from Maryland in 1941 (PDR 25:411-414), was observed on May 7 in one College greenhouse where it was very destructive. On May 15 it was observed in plant beds in Price Georges County where 50% or more of the plants were killed. Anthracnose appears to be widespread in Maryland tobacco beds. Poorly drained beds appear to suffer more damage. The disease has been checked under greenhouse conditions by weekly applications of 2% Spergon. The red copper oxide-cotton seed oil emulsion spray used against blue mold appears not to be effective for anthracnose.

Tobacco wildfire [Phytomonas tabaci] has not been a problem this spring in Maryland tobacco plant beds. (E. A. Walker, University of Maryland. May 27).

WET WEATHER AND PLANT DISEASES IN NEW HAMPSHIRE THIS SPRING: The past 2 weeks (May 10-24) have been cloudy with frequent light rains; as a result, the fruiting of the cedar rusts has been very noticeable. Letters and specimens from all parts of the State have been received requesting information on identification and control. Most of the specimens received were identified as Gymnosporangium juniperi-virginianae; however, some specimens of G. clavipes on Juniperus communis have been received.

The wet cool weather caught most of the apples in central and southern New Hampshire in full bloom; as a result, a full bloom spray, in which a wettable sulfur without lead was used, was made this year on many farms. The weather, accompanied by heavy ascospore shooting, has been ideal for scab [Venturia inaequalis] infection.

Also, as a result of the wet weather, there has been severe defoliation of the white ash trees in and near Durham from Anthracnose (Gloeosporium aridum). (M. C. Richards, New Hampshire Agricultural Experiment Station. May 28).

APPLE SCAB IN MARYLAND: Apple scab spores were first observed to be mature and discharging on April 29 from leaves under Delicious apple trees in a small unsprayed block near College Park. Leaves from commercial orchards in the Rockville and Smithsburg vicinity examined May 22 were so affected by the drought during April and the first week of May that scab development was delayed. Perithecia were small and no ripe spores were found following 2 days of heavy rainfall. Many perithecia appeared to be undeveloped and void of contents, while others that were enlarging and contained asci in the banana stage should mature during the first week in June, or just after the second cover spray period. Perithecia appear to be abundant even though scab was not serious in commercial orchards last season. (E. A. Walker, University of Maryland. May 27).

ANNOUNCEMENT OF A NEW HANDBOOK OF VIRUS DISEASES OF STONE FRUITS

At a regional conference of investigators of stone fruit virus diseases held at East Lansing, Michigan in September 1941, a committee was appointed to bring together and publish under one cover information concerning all of the known virus diseases of stone fruits. This committee consisting of E. M. Hildebrand, chairman, G. H. Berkeley, and D. Cation has presented its report in the form of a publication entitled, "Handbook of Virus Diseases of Stone Fruits in North America."

This paper-bound, printed booklet of 76 pages treats a total of 56 virus diseases of stone fruits under their main hosts such as peach, sweet cherry, sour cherry, plum, almond, and apricot. The information on each disease is given under 16 arbitrary headings, namely, scientific name, synonyms, common names, geographic distribution, economic importance, host range, symptoms, strains, transmission, thermal relationships, immunologic relationships, unusual characteristics, control, remarks, investigators and contributors, and literature. Scientific names are given only as published elsewhere. In order to expedite publication in time for the 1942 season, illustrations were not attempted in this first edition.

It is hoped that this handbook will serve as a useful guide to plant pathologists, pomologists, extension workers, nurserymen, and regulatory inspectors. The responsibility for publication was undertaken by Director V. R. Gardner of the Michigan Agricultural Experiment Station and the book is published as a Miscellaneous Publication of that station. A limited edition of 1000 copies is now available for the cost of printing at 35 cents per copy. Stamps, money orders or checks should accompany orders to Michigan Agricultural Experiment Station, East Lansing, Michigan.